

REMARKS/ARGUMENTS

Favorable reconsideration of this application is respectfully requested.

Claims 1-9, 19-25 and 34-36 remain active in this case.

In the outstanding Office Action, Claims 1, 2, 4, 5, 19, 21 and 22 were rejected under 35 U.S.C. §102(e) as being anticipated by Chen (U.S. Patent No. 6,627,913, hereinafter "Chen '913"); Claims 1, 4, 5 and 6 were rejected under 35 U.S.C. §102(b) as being anticipated by Chen et al. (U.S. Patent No. 6,165,803, hereinafter "Chen '083"); Claims 2, 7, 19 and 21-23 were rejected under 35 U.S.C. §103(a) as being unpatentable over Chen '083 in view of Kurokawa et al. (IEEE Transactions on Magnetics "Application of Diamond Like Carbon Films to Metallic Thin Film Magnetic Recording Media," hereinafter "Kurokawa"); Claims 1-8, 19-24, 34 and 36 were rejected under 35 U.S.C. §103(a) as being unpatentable over Durcan et al. (U.S. Patent No. 6,682,943, hereinafter "Durcan") in view of Kurokawa; and Claims 9, 25 and 35 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicants acknowledge with appreciation the indication that Claims 9, 25 and 35 include allowable subject matter. However, since Applicants believe that the pending independent claims also define allowable subject matter, Claims 9, 25 and 35 have presently been maintained in dependent form.

Applicants respectfully traverse the outstanding grounds for rejection, because in Applicants' view the cited prior art fails to disclose or obviate the claimed invention.

More particularly, independent Claims 1, 19 and 34 defines Applicants' invention as follows:

1. A magnetic memory device comprising:
a first write wiring formed to extend in a first direction,

- a first magneto-resistance element arranged above the first write wiring, and
- a passivation film formed thinner than the first write wiring and disposed on the first magneto-resistance element.

19. A magnetic memory device comprising:

- a first write wiring formed to extend in a first direction,
- a first magneto-resistance element arranged above the first write wiring, and
- a passivation film formed of a DLC film on the first magneto-resistance element.

34. A magnetic memory device comprising:

- a first magneto-resistance element,
- a first read wiring formed on the first magneto-resistance element,
- a passivation film formed on the first read wiring, and
- a second read wiring connected to the first read wiring, disposed below the first read wiring and formed thicker than the first read wiring.

By virtue of the claimed structure, the present invention produces an advantageous effect described in the specification, at page 34, line 20 to page 35, line 19, as follows:

In the conventional MRAM structure, as shown in FIG. 45, when the passivation film 94 is formed on the write wiring WL2, the film thickness Y of the passivation film 94 becomes approximately 9000 angstrom since it is formed of a silicon nitride film of 6000 angstrom, a TEOS (Tetra Ethyl Ortho Silicate) film and a ground film. Further, in order to pass a current, the write wiring WL2 is formed with substantially the same thickness as the write wiring WL1. Therefore, since the thick passivation film 94 and thick write wiring WL2 are formed on the MTJ element 90, it is difficult to perform the magnetic transferring operation even if another MTJ element is set closer to the MTJ element 90 in this state.

On the other hand, in the first structure, since the second write wiring WL2 and passivation film 53 are formed thin, a distance X from the chip surface to the surface of the lower metal layer 51a, that is, the total film thickness of the MTJ element 10, second write wiring WL2 and passivation film 53 is equal to or less than 50 nm. Therefore, since the MTJ element 10 is set closer to the chip surface in comparison with a case of the normal MRAM, the magnetic transferring operation can be performed.

The outstanding Official Action takes the position that the spacer layer 40 in FIG. 4 of Chen '913 corresponds to the passivation film recited in Applicants' claims. However, FIG. 4 does not show an operational end device, but merely illustrates an intermediary product in a production process. The spacer layer 40 is subjected to an etching process, and turns to a

spacer 50 shown in FIG. 5, as evident from the disclosure at column 4, line 59 to column 5, line 10 of Chen '913.

In contrast, the passivation film of the present invention is a passivation film in an operational end device. Therefore, it is respectfully submitted that the outstanding grounds for rejection have an erroneous underpinning insofar as the grounds for rejection rely on the finding that the spacer layer 40 in FIG. 4 of Chen '913 corresponds to the passivation film of the claimed invention.

The outstanding Official Action further includes the finding that the dielectric layer 76 shown in FIGS. 12 and 13 of Chen '803 corresponds to the passivation film of the present invention. Like Chen '913, Chen '803 is directed to a method, and FIGS. 12 and 13 show an intermediary process, not the end process for manufacturing a chip. Therefore, the dielectric layer 76 is a protection film or an interlayer insulating film, and is not a passivation film. Accordingly, the outstanding grounds for rejection relying on Chen '803 is likewise believed to have an erroneous underpinning and is therefore also traversed on that same basis.

Durcan discloses a method for manufacturing a cross point cell.

Krosawa discloses using a DCL film for a medium. The medium is not a memory, and is not configured to function as an integrated circuit. Therefore, it is respectfully submitted that it would not be obvious to apply the DLC film of Kurosawa, which is used for a medium, to the memory of Chen '803.

Krosawa discloses using a DCL film for a medium. The medium is not a memory, and is not configured to function as an integrated circuit. Therefore, it is respectfully submitted that it would not be obvious to apply the DLC film of Kurosawa, which is used for a medium, to the memory of Durcan.

Accordingly, it is respectfully submitted that the outstanding grounds for rejection have been overcome, and withdrawal thereof is respectfully requested.

Consequently, in light of the above comments, no further issues are believed to be outstanding, and the present application is believed to be in condition for allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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